

# C-SERIES CLEANERS

**AXEON® C-Series Cleaners** are heavy duty cleaners that quickly and easily mix with water to make an easy to use cleaning solution that safely and effectively removes a wide range of membrane foulants from polyamide thin film (TF), cellulose acetate (CA), nanofiltration (NF) and ultrafiltration (UF) membranes.



AXEON C-Series Cleaners			
Product	For Removing	Membrane Types	Solution pH
C-10 <sup>A</sup>	Calcium Carbonate Scale	TF, CA, NF, and UF	2

## SYMPTOMS OF CALCIUM CARBONATE SCALE

- Scale extruding out of the downstream end of the last membranes in the system
- All scale dissolves when introduced to a dilute hydrochloric acid solution
- Poor salt rejection, low flow, and/or high pressure differential on individual membrane test data
- 8" x 40" element weight exceeds 45 pounds
- Site reports interruption in the antiscalant or acid injection
- Site reports scale in the last membrane housing or piping of the concentrate stream

## TESTING FOR CALCIUM CARBONATE SCALE

Calcium carbonate scale is not always white. However, a quick test can be conducted to see if the foulant is comprised solely of calcium carbonate.

In a glass beaker, make a 1:1 dilution of HCl and DI water. Drop a small sample of the foulant into the solution. If the foulant contains calcium carbonate, it will bubble. Continue adding acid until the bubbling stops or until the scale disappears.

If the beaker contains residual material after the bubbling has stopped, then the foulant consists of more than just calcium carbonate.



Product	For Removing	Membrane Types	Solution pH
C-20 <sup>A</sup>	Organics	TF, CA, NF, and UF	11

A. MSDS available online at AXEONwater.com or upon request

## SYMPTOMS OF BIOLOGICAL FOULING

- Visible slime on the feed side of the membrane
- Site reports slime in the cartridge filter housing and piping
- Site reports high pressure differential in the first array
- Individual membrane test data reports high pressure differentials
- Membranes are telescoped
- Foul odor

## STEPS TO PREVENT BIOLOGICAL FOULING

- Properly dose sodium bisulfite
- Clean and sanitize the pretreatment equipment and piping
- Consider an intermittent biocide treatment
- Evaluate the necessity of a continuous injection biocide

## MIXING AND APPLICATION INSTRUCTIONS

1. Inspect all cleaning system components to insure CIP tank, hoses and cartridge filters are present.
  - a. Flush or replace if necessary.
  - b. Fill cleaning tank with reverse osmosis permeate water or DI water.
  - c. Turn on agitator or tank recirculation pump.
2. Slowly add 1 lb (0.45 kg) of C-10 or C-20 to every 12 gal (45 l) of water to cleaning tank and mix thoroughly.
  - a. The pH of the solution should match product specifications.
  - b. The solution should be heated up to 45°C to improve cleaning efficacy.
3. Circulate solution in the same direction as the feed flow. Typical circulation times are 30 - 90 minutes.<sup>B</sup>
  - a. Maximum flow rate per membrane housing is 40 gpm (152 lpm) for 8-inch elements and 10 gpm (38 lpm) for 4-inch elements.
  - b. Maximum pressure for cleaning is 60 psi (4.2 kg / cm<sup>2</sup>).
4. In cases of heavy fouling, divert the first 10 - 20% of cleaning solution to drain to prevent redeposition of removed solids.
5. Rinse with reverse osmosis permeate water before returning system to service.
  - a. When returning unit to service, divert product water to drain until any residual cleaning solution has been rinsed from system.

B. Depending on the nature of the fouling, a soak period may be necessary for optimal results.

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